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ABSTRACT

Limitations in past research in educational television and guidelines for conducting more fruitful future research are identified. The current practice of utilizing few, if any, common criterion measures of effectiveness presents difficulties in the attempt to generalize from current research on ETV. An important initial effort in attempting to improve research in ETV would be to isolate those factors in the learning situation that might produce changes in the behavior of pupils viewing television. It would seem appropriate that an attempt be made to measure the question-asking behavior of both the studio teacher and the classroom teacher involved in the establishment of learning experiences for a particular group of pupils. Based on an evaluation of the literature and the author's research, the following recommendations for future research are proposed: (1) Teachers selected for participation in studies utilizing ETV should volunteer and/or have a favorable attitude toward the use of ETV; (2) Eliminate comparison studies, e.g., TV science versus non-TV science instruction; (3) Increase emphasis on developmental (formative) research that can aid in the design and implementation of the particular TV series--selection of evaluative instruments that measure each specific program objective, increased emphasis on measure of verbal and non-verbal behavior of studio and classroom teachers, and increased emphasis on measures of verbal and non-verbal behavior of students receiving TV instruction. A 20-item bibliography is provided. (DB)

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WHAT INSTRUCTIONAL TV RESEARCH SAYS TO THE RESEARCHER

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What Instructional TV Research Says to the Researcher

Since instructional television's debut in the early 1950's, numerous large-scale research projects and individual investigations have sought to determine the effectiveness of this form of mediated instruction in the classroom. This interest and research in the educational utility of television was stimulated "... by a predicted and actual shortage of competent teachers and by the need to educate a rapidly growing population which had to learn more than ever before because of the explosion of human knowledge ... (Greenhill, 1967)."

The purpose of this paper is to identify limitations in past research efforts in ETV and to identify guidelines for conducting more fruitful efforts in the future.

Early studies, supported by the National Educational Television and Radio Center and the Ford and Rockefeller Foundations, were, at best, analytical. Exemplary research, largely concerned with studies of the feasibility of large class instruction by television, scheduling and school building problems in utilizing television, budgetary implications, economies of teacher time, space, and methods of developing teacher talent for large and small group instruction with television, is found in Proceedings of the NEA Leadership Seminar on the Role of Television in Instruction (NEA, 1958). Underlying this type of research seemed to be the assumption that in instructional television rested the solution to perennial problems of teacher shortage, overcrowded classrooms, and inadequate teacher inservice experiences--especially in such subjects as math and science where instruction was considered substandard, and national priorities high.

Understandably, two prime areas of further research recommended by the NEA conference were the optimum distribution of television teachers among other methods and techniques, and the "... manifold problems arising from consideration and acceptance of TV teaching by parents, pupils, and educators ... (NEA, 1958)."

So intense was educational television research immediately following its implementation in the educational "establishment", that Greenhill (1967) has cited the 1954-64 decade as "... the era of most intensive research on instructional television." A flurry of research was particularly obvious following enactment of Title VII of the National Defense Educational Act of 1958 which authorized the expenditure of federal monies to support research, experimentation, and dissemination of information about communication media. Kittross (1969) explained "... there was an 'open season' on almost any ETV research problem that could be conjectured in the mind of a potential 'principal investigator'." Over a thousand projects were initiated, the vast majority of which were "comparative effectiveness" studies aimed at determining the superiority of television instruction or direct teaching in the classroom.

Even though most of the research generated by this massive effort has been published, Schramm (1962) uncovered 400 additional unpublished descriptive or analytic studies of specific programs in local school districts. This proliferation of research did little to improve the quality of research being done at that time, however.

Has educational television (ETV) research been meaningful? One basis for this question raised by Kittross (1969) lay in several major reviews of

the literature prepared by Schramm (1960), Kumatra (1960), Schramm (1962), Greenhill (1967), Reid and McLennon (1967), Kittross (1969), and Chu and Schramm (1967). In each case, after considering hundreds of "comparative effectiveness" studies, the same conclusion was drawn--students learn about as much by television as with face-to-face instruction--or, as Schramm (1962) more optimistically pointed out, "Instructional television is at least as effective as ordinary classroom instruction (and, when taught by television) ... math and science have been outstandingly successful ...."

Reports by Lumsdaine and Orr (1959), Suchy and Baumann (1960), Rothchild and Lastinger (1961), Pflieger and Kelly (1961), and Jenkins (1964) illustrate the comprehensiveness of these comparative studies. In the Milwaukee Project, involving 9,000 secondary students over a three year period, Suchy and Baumann (1960) utilized both teacher opinion and achievement data to assess effectiveness. Six thousand students in 192 schools were involved in the Denver TV Project (Schramm, 1962), 4,000 third and fourth graders in the Ohio study reported by Frazier and Evans (1960), and nearly 7,000 elementary and secondary pupils in the Florida West Coast Project (Rothchild and Lastinger, 1961).

In Schramm's (1962) analysis of 393 comparisons, 63 percent showed no significant differences; in 21 percent, pupils learned significantly more from television; and in 14 percent of the comparisons, pupils learned significantly less from television. Five years later, Chu and Schramm (1967) confirmed this trend; in 421 separate comparisons in 207 published studies, 308 were non-significant, 63 were significant for television, and 50 significantly favored conventional teaching.

Kittross (1969) suggested two reasons why ETV research had led to so few "practical" results. First, he suggested that those who are conducting the research might be lacking in training, ability, or inclination to conduct meaningful research. As Skornia (1966) mentioned, "Many of the so-called research reports are products of workers with no research training or standards. They do not stand up under any valid research criteria." He further states that there are very few professional researchers qualified to do both communications and educational research. An apparently good example of this was found in the analysis made by Stickell (1963) of 31 studies that made 250 comparisons between ETV and conventional instruction. Only 10 of these 250 comparisons were fully interpretable on the basis of five criteria: (1) comparability of control and experimental subjects, (2) assignment procedures, (3) comparability of instructions, (4) tenability of statistical assumptions, and (5) adequacy of other controls. Two hundred seventeen failed to meet two or more of the criteria and were considered by Stickell to be uninterpretable.

It is possible that the techniques and measuring instruments were too imprecise or invalid for adequate determination of differences which existed. When reviewing the literature on the effectiveness of ETV in general, and more specifically, elementary school science televised instruction, one cannot help but notice that the traditional interpretation of effectiveness has been in terms of educational achievements--facts, knowledge, information acquired.

Considering the great number of individual programming efforts throughout the United States, it is reasonable to expect the identification and/or

development of a vide variety of measures of achievement which are consistent with the objectives of the individual programs. The choices made concerning the type of test to administer (e.g. standardized versus a locally-contructed test meeting specific criteria--grade level, content or process emphasis, etc.), however, creates potential difficulties with both the preciseness and validity of the instruments. The current practice of utilizing few, if any, common criterion measures of effectiveness presents difficulties in the attempt to generalize from current research on ETV.

As a second reason why ETV research has led to few "practical" results, Kittross (1969) suggested that there "might be something wrong with the entire concept of ETV research as practiced thus far." Upon reviewing the research on the forms of effective teaching from film and ETV, Schramm (1962) suggested that the net result so far was to reinforce the belief that good teaching is much the same on TV, on films, or in the classroom.

Chu and Schramm (1967) stated that instructional television "works best when it is made an integral part of instruction--that is, when it is woven into a classroom context of learning activities; indeed, when the studio and classroom teachers function as nearly as possible as a teaching team."

Schramm (1962) and Suchman (1966) assumed that, in the elementary school, the TV lesson itself forms only one component of the learning experience that the classroom teacher carefully builds his lesson around the TV experience, providing initial preparation, immediate follow-up, and other learning experiences which TV cannot so readily accomplish. From information gained from the Denver Project, Chu and Schramm suggested that a skillful classroom teacher was the best learning aid that could be combined with television.

Shram (1962) urged researchers to shift their emphasis from the uniqueness of television to the totality of the learning process. "The most important research in instructional television is now ... research on the total process of which television is a part." While this recommendation has been reiterated in every major review of ETV literature, only in the last five years have investigations taken this perspective.

Thus, the classroom teacher has a major responsibility for the success of ETV in his classroom. It would appear that an important initial effort in attempting to improve research in ETV would be to isolate those factors in the learning situation that might produce changes in the behavior of pupils viewing television.

Williams (1962) suggested that "the attitudes, ability and personality of the classroom teacher may be the most important missing variables in measuring effectiveness of ETV." One could contend, in addition, that the overt verbal behavior of the studio and classroom teacher might also significantly affect the effectiveness of televised instruction.

If, as Schramm suggested, good teaching is much the same whether on TV or in the classroom, and, much of the current research on classroom teaching effectiveness is a measure of teacher verbal behavior (e.g. question-asking behavior), then it would seem appropriate to the investigator to attempt to measure the question-asking behavior of both the studio teacher and the classroom teacher involved in the establishment of learning experiences for a particular group of pupils.

Because the investigation of teacher question-asking behavior appears warranted in helping to measure the effectiveness of ETV, it would seem that researchers have missed a potentially fruitful avenue for their efforts.

Only recently have research efforts been guided in this direction (Beisenherz, (1971; Tucker, 1971). In these studies, multi-category question systems were utilized to determine the effectiveness of a locally televised elementary school science series in the Seattle, Washington area. The verbal questioning behavior of studio (TV) and classroom teachers was analyzed in terms of the proportions of questions emphasizing different levels of thinking, process skill development, and different phases of a model instructional strategy identified by the authors.

Implications for future research.

Based on an evaluation of the literature and research conducted by the authors, the following recommendations for future research are proposed.

1) Teachers selected for participation in studies utilizing ETV should volunteer and/or have a favorable attitude toward the use of ETV in their classrooms. Because of the importance of the classroom teacher to the successful implementation of the TV program in his classroom, it can be hypothesized that those teachers who react positively to this medium will be more effective in its utilization. Although the extent of generalizability is decreased with this procedure, the findings will more accurately describe the population of teachers who normally view ETV. Once selection of these teachers has been accomplished, random placement of the teachers into treatment groups can occur.

2) Elimination of comparison studies, e.g. TV science versus non-TV science instruction. The unsuccessful attempt in prior research efforts to control all the many variables inherent in this type of design strongly suggests an emphasis on the identification and evaluation of each of the objectives of the particular TV programming effort.

3) Increased emphasis on developmental (formative) research that can aid in the design and implementation of the particular TV series.

   a) Selection of evaluative instruments that measure each specific program objective. Few standardized tests

can be identified that provide the "match" between test objectives and the objectives of the particular TV series. The increased use of locally developed and validated instruments in studies evaluating televised instruction, however, has implications for the broad generalizability of findings to the body of TV research.

b) Increased emphasis on measure of verbal and non-verbal behavior of studio (TV) and classroom teachers, e.g. questioning strategies, that are consistent with the nature of the discipline presented. Only through the identification and observation of these behaviors can the finished TV production be maximally effective in the classroom.

c) Increased emphasis on measures of verbal and non-verbal behavior of students receiving the TV instruction. If students do not respond to a particular technique, question, strategy, the implications are clear to the TV program developer.

It would appear that the development of a TV production includes three phases:

1) identification of appropriate objectives and instructional strategies.
2) identification of key activities, questions, and their sequence for each lesson.
3) implementation of the programming effort to the viewing audience.

To realize maximum effectiveness of the production in terms of pupil mastery of each objective, research (or evaluation) should be an important aspect of phases two and three above.

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